

Risk Analysis in the Czech Republic: Current Approaches and Challenges

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Abstract

This article presents a view and opinion on the methods of applying risk analysis in the Czech Republic, gained through practical experience. Risk analysis is a fundamental building block in the creation of key documents in the field of emergency planning and crisis management, which are an integral part of the security system of the Czech Republic. In risk analysis, an important role is played by determining the threats that most threaten the Czech Republic, and then adopting measures that will reduce the level of risk to an acceptable level. The increasing number of natural and anthropogenic emergencies naturally brings with it an increase in the severity of their consequences. Within the framework of the systematic application of the policy of preventing emergencies and crisis situations, the analysis of threats and the risks arising from them is of key importance. The publication describes the risk analysis methodology, which culminated in the adoption of the document "*Threat Analysis for the Czech Republic*" approved by Resolution of the Government of the Czech Republic No. 369 in April 2016. The document analysis method was used as the basic research method. This qualitative research method was focused on the analysis of threats in the Czech Republic. At the same time, it responded to the past extraordinary events that are commented on in the publication. The developing trend of research in the field of protection against the effects of CBRN substances was also emphasized. The analysis of documents is limited to the period from 2016 to the present, because the Threat Analysis for the Czech Republic was approved in 2016. The basic question is therefore whether this threat analysis corresponds to the current security situation in the Czech Republic and in Europe. Some challenges and potential shortcomings in this area are pointed out, especially at the level of territorial self-governing units and in the area of legal regulation and legislation. The perspective on new challenges in connection with protection against the effects of CBRN substances, increased risk of terrorism and other extraordinary events causing large-scale violations of the law is also emphasized. In this context, the issue of soft targets is also partially analysed, since the vast majority of similar incidents occur in these facilities. The conclusions from the article and the aforementioned ambiguities should be the subject of expert discussion in the future, and possible legislative revisions should be made in order to ensure systemic efficiency and clear definition of responsibilities both in the area of risk analysis and in the area of subsequent processing of crisis plans and other security documents

KEY WORDS: risk analysis, threat analysis for the Czech Republic, crisis management, crisis law, emergency, crisis situation, territorial self-governing unit

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1. Introduction

The current security situation represents an increase in threats and the resulting risks that can directly or indirectly affect or already affect the provision of protection to the population. Potential threats can be chained and can

damage the protected interests of the security system of the Czech Republic. Risk analysis is a key tool for identifying, assessing and managing threats that can endanger the safety of the population, infrastructure and the environment. [1]

In the Czech Republic, this issue is enshrined in the legislative frameworks of crisis management and population protection, in particular in Act No. 240/2000 Coll., on crisis management, in Act No. 239/2000 Coll., on the integrated rescue system, Act No. 241/2000 Coll., on economic measures for crisis situations and in implementing regulations. This legislation is the basis of crisis management in the Czech Republic.

The article examines current approaches in this area. The key task of crisis management authorities in the field of population protection is to protect the interests of the state, in this case the protection of human lives and health is paramount. Through risk analysis in the Czech Republic, it is possible to identify the main challenges in the field of security from the perspective of population protection and to propose recommendations for its more effective implementation in practice. From this point of view, risk analysis has an irreplaceable role in the implementation of emergency and crisis prevention.

The security environment of the Czech Republic is influenced by a number of factors that can lead to the emergence of emergencies and crisis situations. Risk analysis is a key tool for identifying potential threats, subsequent assessment and valuation of risks and the design of specific measures to mitigate their impacts. In the context of crisis management and population protection, a systematic approach to risk analysis is a basic prerequisite for effective planning and decision-making. Risk analysis is a fundamental building block in the creation of planning documentation, which is a key basis for planning and implementing measures in dealing with both emergencies and crisis situations. In particular, these are the following basic planning documents:

- *crisis plans* of regions and municipalities with extended jurisdiction,
- *emergency plans* of regions,
- *external emergency plans* in emergency planning zones of nuclear facilities,
- *external emergency plans* in emergency planning zones of entities handling hazardous chemical substances or mixtures,
- *flood plans*,
- *pandemic plans* and others.

These are documents that are an integral part of the security system of the Czech Republic and their processing is entrusted to the crisis management authorities at the central level and at the level of territorial self-governing units. Therefore, their professional and precise processing is essential.

In most cases, the processors of these plans are regional fire rescue services, or regional authorities or municipal authorities of municipalities with extended powers. In recent years, the regional crisis plans and the crisis plans of municipalities with extended powers have been processed uniformly through methodological guidelines. Of course, intensive cooperation between all processors according to their responsibilities is a matter of course.

The Threat Analysis for the Czech Republic is managed by the Ministry of the Interior - General Directorate of the Fire Rescue Service of the Czech Republic. The processing of crisis plans, emergency plans, external emergency plans, flood plans and other plans is firmly anchored in crisis legislation.

In recent years, the analysis of risks caused by the use of CBRN agents has increasingly come to the fore. Risk analysis in this area is particularly problematic. Various international and national standards have been developed to control these agents so that their negative impact on people and the environment is minimized to an acceptable level. However, in the case of a mixture of different CBRN agents, it is very difficult to take into account the contribution to the overall risk at both low and high levels of exposure, which can lead to stochastic (probabilistic, late) effects and to evaluate the overall deterministic (acute) effects [2]. Nevertheless, even in the case of risk analysis in the area of CBRN agents, it is necessary to use the general principles valid for risk analysis and then reflect them in crisis or emergency plans.

In 2013, the Government of the Czech Republic approved the Concept of Population Protection until 2020 with a view to 2030 by Resolution No. 805. The concept emphasizes the implementation of a policy of prevention of extraordinary events and crisis situations, and therefore task No. 3 was set in the conclusion - to prepare an analysis of threats for the Czech Republic and to reflect its conclusions in methodological and strategic materials in the field of state security [18]. A working team of the Fire Rescue Service of the Czech Republic was created to fulfil the task, which, however, cooperated significantly with representatives of the ministries and central administrative authorities concerned - in particular with the Ministry of the Interior, the Ministry of Defence, the State Material Reserves Administration, the State Office for Nuclear Safety and others. The result was the identification of 72 types of hazards, which were classified in the hazard register according to individual categories.

This professional article presents a view and opinion on the method of applying risk analysis in the Czech Republic, gained through practical experience. Risk analysis in the Czech Republic has been transforming in recent years from reactive planning to proactive management based on data and international cooperation. The current system combines legislation and methodological guidelines of central state administration bodies with modern trends in the field of cyber, information and economic security [1]. The research team of authors uses academic reflections, thought experiments and brainstorming in their academic work to propose new and improved measures in the discussed area. Close connection to the practice of emergency events and crisis situations is a matter of course and a condition. The article emphasizes in particular emergencies associated with releases of hazardous chemical substances and

emergencies associated with disruption of public order (including terrorism). It is in these areas that the greatest progress has been made since the approval of the risk analysis.

2. Risk Analysis Methodology

Risk analysis is a systematic process of identifying, assessing and managing risks, which serves as a basis for decision-making in the field of security, crisis management and population protection. In the Czech Republic, a combination of qualitative and quantitative methods is used, with the choice of a specific methodology depending on the type of risk, data availability and the purpose of the analysis. The choice of a risk assessment method, or the choice of a combination of several methods for risk assessment, can also be significantly influenced by the skills and personal experience of individual experts in the investigation team.

Basic classification of risk assessment methods:

- *qualitative methods*: for example, SWOT analysis, brainstorming, expert assessment.
These risk analysis methods are an important tool, especially in situations where there is not enough quantitative data available or there is a need to respond quickly to an emerging threat. These methods rely on expert judgment, discussion, structured interviews and participatory approaches. They are widely used in public administration, crisis management and in the field of strategic planning.
- *quantitative methods*: for example, FMEA (Failure Mode and Effects Analysis), HAZOP (Hazard and Operability Study), fault tree analysis (FTA), scenario analysis.
These risk analysis methods use numerical data, statistical calculations and mathematical models to objectively assess the probability of risk occurrence and its impacts. They are particularly necessary in technical fields, industry, infrastructure and in the field of cyber and information security, where it is possible to work with historical data, measurable quantities and prediction models.
- *geoinformation technologies* (GIS): enable spatial risk analysis, modelling of the impacts of floods, accidents or the spread of hazardous chemicals or mixtures [1].

Geoinformation technologies (GIS – Geographic Information Systems) represent a key tool for spatial risk analysis, visualization of endangered areas and support of decision-making processes in the field of crisis management, population protection and planning of security measures. In the Czech Republic, GIS is increasingly integrated into the practice of public administration, components of the integrated rescue system and academic research. Unfortunately, this is not a unified comprehensive system, but rather the individual interests of individual authorities and organizations are being promoted. An example can be the diversity of programs focused on accidental releases, toxic clouds and the analysis of their consequences. Just as an example, we can name the ALOHA programme (Areal Locations of Hazardous Atmospheres from the U.S.A) for modelling the extent of toxic gases and clouds after a release, the TerEx programme (TERoristic EXpert) for simulating the impacts of releases of hazardous substances and toxic clouds, the IAMDispersion programme for modelling chemical gas releases with visualization of the impact on the environment or the PHAST programme for detailed modelling of accidents including mixtures of substances and their spread.

The main disadvantage of simpler programs is their high dependence on the specified inputs and the results can be considered rather indicative. For more expensive programs, it is the high price, the need for professional training, dependence on substance databases (not always up-to-date physical-chemical properties) and validation is sometimes very difficult. In practice, this means that for the creation of legislation and subsequent specific decisions of public administration bodies, risk analysis is not carried out in this way and is strictly limited to the established legal standards and regulations.

- *modern approaches* are mainly the use of artificial intelligence, machine learning and big data for risk prediction.

The methodology should be adapted to the type of risk, data availability and purpose of the analysis (e.g. planning, response, recovery). These modern methods also come into conflict with the traditional approach in practice and when making specific decisions, the crisis management authority cannot rely on the results obtained by modern methods, but must rely on valid legislation.

The risk analysis process is a follow-up procedure and for the resulting risk analysis it is important to respect the individual steps and procedures in risk analysis. It is also necessary to emphasize that the risk analysis process is cyclical, i.e. after monitoring we return to identifying new risks in order to keep the system up-to-date and effective. Especially in the field of security and crisis management, with the current development of the security situation not only in Europe, but throughout the world, the cyclicity of risk analysis is one of the priorities of crisis management and crisis planning.

A graphic representation of the risk analysis process is shown in Figure 1.

The Threat Analysis of the Czech Republic used a multi-criteria approach to assessing individual risks, which was applied within individual regions and also to municipalities with extended jurisdiction, i.e. at the regional and local levels during its processing.

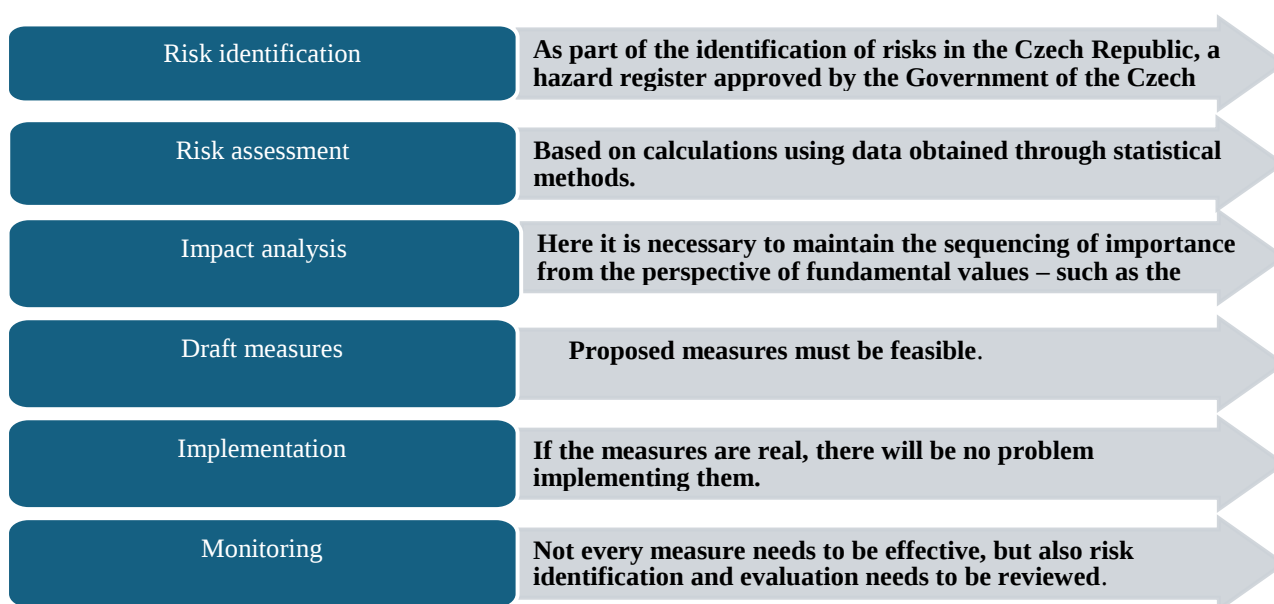


Fig.1 Graphic representation of the crisis analysis process

3. Institutional Framework in the Czech Republic

In the Czech Republic, risk analysis is part of the crisis management and population protection system. In general, the security system of the Czech Republic includes all public administration bodies at the central level and at the level of territorial self-governing units that participate in the protection of the population [10- 13].

However, not all bodies participate equally in the security of the Czech Republic. Act No. 240/2000 Coll., on crisis management, defines crisis management bodies that have a special position in preparing for and resolving crisis situations. These crisis management bodies have special competences and powers during a state of crisis, by which they can, to the extent necessary, restrict the rights and impose obligations on natural and legal persons and can fundamentally modify the regime of life and activities in the territory for which a state of crisis is declared [9].

These key institutions for risk analysis and processing of planning documentation are:

- *Government of the Czech Republic* – supreme body of crisis management
- *Ministry of the Interior of the Czech Republic* – responsible for crisis management and civil protection.
- *Fire and Rescue Service of the Czech Republic* – ensures expert risk assessment, planning and implementation of measures.

Bodies of territorial self-governing units:

- *regional governors and regional authorities* – are responsible for the preparation of crisis plans and risk analyses at the regional level, the processing is carried out by the regional fire rescue service in close cooperation with all affected public administration bodies
- *mayors of municipalities with extended powers and municipal authorities of municipalities with extended powers* – are responsible for the preparation of crisis plans and risk analyses at the municipal level with extended powers, the processing is carried out by the regional fire rescue service again in cooperation with all affected public administration bodies
- *Academic sphere and research institutions* – participate in the development of methodologies, training of experts and applied research, solving projects in the field of security and crisis management
- *International cooperation* – e.g. with the European Union (Civil Protection Mechanism), NATO, UN (UNDRR-Office for Disaster Reduction) aims at the greatest possible legislative unification of procedures in risk analysis. Cross-border cooperation of regional authorities plays an irreplaceable role.

A representation of the institutional framework for risk analysis in the Czech Republic is shown in Figure 2.



Fig. 2 Institutional framework of risk analysis in the Czech Republic at the central level

4. Risk Typology in the Czech Republic – Threat Analysis for the Czech Republic

The process of preparing the threat analysis for the Czech Republic also included the creation of a working team. The working team of the Fire Rescue Service of the Czech Republic applied a preliminary analysis to the list containing 72 types of possible hazards and reduced the overview to 51 types of hazards. For example, all types of hazards classified as natural - cosmic were excluded. A reduced hazard register was created, which has 5 groups of hazard types at the subordinate level. An overview of the reduced hazard register is shown in Figure 3.

Out of the total number of identified hazards, a total of 49 types were analysed in detail. The remaining 2 types of hazards (violation of information security of critical information infrastructure, large-scale disruption of the financial and foreign exchange economy of the state) were identified as high-risk hazards without prior analysis and assessed as unacceptable risks. The risks resulting from individual hazards analysed in detail were subsequently assessed in terms of their significance.

Multi-criteria analysis was used to assess their significance and, according to the result of the risk level, they were classified into three categories:

- *types of hazards with acceptable risk* – emergency measures are not expected to be taken. Situations are manageable through the normal activities of the integrated rescue system components.
- *types of hazards with conditionally acceptable risk* – emergency measures are required. The situation requires preparation for an emergency and falls within the scope of emergency planning.
- *types of hazards with unacceptable risk* – measures fall within the scope of crisis planning. A state of emergency can be expected. An operational plan, or rather a type plan, is therefore developed to manage the crisis situation.

A simple relationship was used to determine the risk level

$$R = F \times C$$

where F (frequency) is the coefficient of the frequency of possible occurrence of a hazard and C (consequences) is a summary expression of adverse effects capable of damaging the protected interests. The consequences were then further examined in more detail using other coefficients: the coefficient of impacts on the lives and health of people, the coefficient of impacts on the environment, the coefficient of economic impacts and the coefficient of social impacts.

The coefficient values were determined by expert estimation from a scale of 0 to 10. It is clear that the dominant protected interest is the lives and health of people, therefore, in Table 1 we present an example of determining fatal impacts and determining the possible threat to people.

Based on the assessment, 21 types of dangers with unacceptable risk were identified, which require priority attention. However, a military attack on the Czech Republic, as one of the threats included in this category, was excluded from the further process, taking into account the fact that a comprehensive separate system of planning and ensuring preparedness has been developed for this area. On the contrary, the threat of a breach of information security of critical information infrastructure and the threat of a large-scale disruption of the financial and foreign exchange economy of the state were included in the category of dangers with unacceptable risk without prior analysis [6].

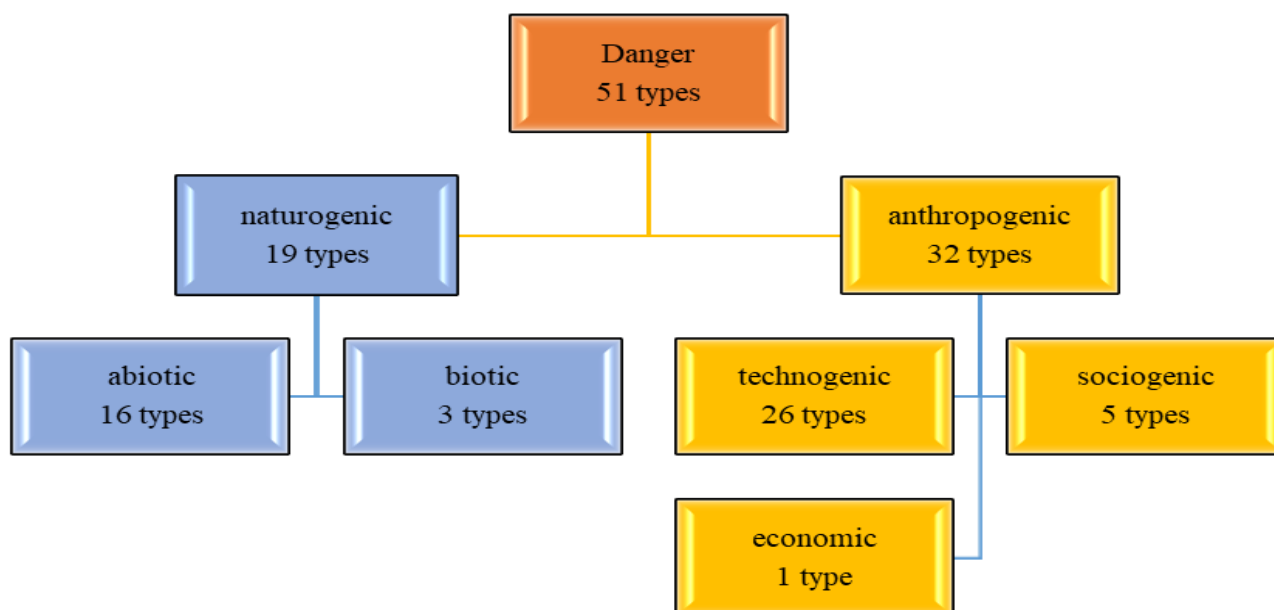


Fig. 3 Overview of reduced hazard register

Table 1 An example of the value-setting of fatal impacts and the value-setting of the number of people at risk [6]

Fatal impacts		Restrictions on people	
count	value	count	value
no deaths	0	no restrictions on persons	0
individuals (1-4 dead	1	up to 1 000 restricted persons	1
5-10 dead	2	1 001- 5 000 restricted persons	2
11-20 dead	3	5 001- 10 000 restricted persons	3
21-50 dead	4	10 001- 50 000 restricted persons	4
51-100 dead	5	50 001- 125 000 restricted persons	5
101-500 dead	6-7	125 001- 250 000 restricted persons	6
501-1000 dead	8	250 001- 500 000 restricted persons	7
> 1000 dead	9-10	500 001- 1 000 000 restricted persons	8
		1 000 001- 5 000 000 restricted persons	9
		>5 000 000 restricted persons	10

The result of the threat analysis was the inclusion of 22 types of threats in the category of unacceptable risk, 26 types of threats in the category of conditionally acceptable risk and 2 types of threats in the category of acceptable risk. The threat analysis excluded 21 types of threats that had already been excluded in the preliminary analysis and the type of threat of a military attack on the Czech Republic [6].

A military attack on the state is not primarily dependent on risk analysis, but depends on the military-political situation in the world and in Europe. The dependence of this threat is conceptually dependent on the fundamental components of the state's security policy - foreign and defence policy. The principles of this policy are expressed in the document "Security Strategy of the Czech Republic" [5].

Subsequently, the final report "Threat Analysis for the Czech Republic" was approved by Resolution of the Government of the Czech Republic No. 369 in April 2016 in the form below.

Types of hazards with unacceptable risk are listed in Table 2.

The processed threat analysis is binding for the processing of all planning documents in the field of crisis management. Based on the threat analysis, ministries and other central administrative authorities (in particular the State Material Reserves Administration and the State Office for Nuclear Safety) are obliged to prepare standard plans for individual activities. These standard plans are then a treasure trove for the processing of crisis plans in the territories of regions and municipalities with extended jurisdiction.

The declared states of crisis since the crisis legislation was in force essentially confirm the threat analysis. If we analyse the categories of hazards in more detail, we come to the following conclusions:

- *natural abiotic hazards:*

The most common cause of declared states of emergency was floods, with regional governors declaring a state of emergency 33 times and the government of the Czech Republic declaring a state of emergency three times. Floods are the most common threat to the Czech Republic, and in times of demonstrable climate change, these are floods caused by torrential rains, also called flash floods

- *natural biotic hazards:*

The most famous example is the repeated declaration of a state of emergency by the government of the Czech Republic during the COVID 19 epidemic. Extensive emergency measures were accompanied by huge financial expenses and caused a large decline in the state budget of the Czech Republic.

On the other hand, these measures had an unclear effect on the number of deaths due to the epidemic, and the effect of the declared emergency measures on the number of deaths has not yet been studied.

Table 2 Types of hazards with unacceptable risk [6].

Hazard category		Types of hazards with unacceptable risk
naturogenic	abiotic	Long-term drought
		Extremely high temperatures
		Torrential flood
		Heavy rainfall
		Extreme winds
		Flood
	biotic	Epidemics – mass diseases of persons
		Epiphytia – mass diseases of field cultures
		Epizootia – mass diseases of animals
anthropogenic	technogenic	Large-scale food supply disruptions
		Disruption of the functionality of major electronic communications systems
		Security of information breaches critical information infrastructures
		Special flood
		Hazardous chemical leaks from stationary equipment
		Large-scale drinking water supply disruptions
		Large-scale gas supply disruptions
		Large-scale oil and petroleum product supply disruptions
		Radiation accidents
		Large-scale electricity supply disruptions
	sociogenic	Large Scale Migratory
		Waves Disturbing Large Scale Legality (Including Terrorism)
	ekonomic	Disrupting the Large Scale Financial and Foreign Exchange Economy

Less well known is the declared state of danger in the epizootic of pigs that were infected with African swine fever. In this case, too, the impacts of crisis measures on the resulting effect are not evaluated. In Europe, however, African swine fever is constantly threatening, along with the dangerous occurrence of foot-and-mouth disease. A significant threat here is primarily the possibility of transmission of the disease from animals to humans.

- *anthropogenic technogenic hazards:*

The situation is more complex in this area. In terms of threat analysis, no such hazard has occurred. Nevertheless, a state of danger has been declared three times due to the leakage or potential leakage of hazardous chemical substances. The leakage of petroleum benzene during a railway accident on February 28, 2025 at the Hustopeče nad Bečvou railway station is particularly telling. The Governor of the Olomouc Region declared a state of danger so that by taking emergency measures it would be possible to quickly remediate soil and water and prevent further spread of contamination.

From the point of view of threat analysis, this is not *a leak of a hazardous chemical substance from a stationary facility, but a leak in transport*. Therefore, the authors believe that the leak of a hazardous chemical substance during transport, whether by road or rail, should also be included among the unacceptable risks. Road and rail transport often transport very large quantities of hazardous chemical substances of a toxic, explosive and flammable nature in the Czech Republic. In the event of a serious traffic accident and uncontrolled leak into the surrounding area, this can pose a serious threat to the lives and health of the population and entail high costs for restoring the environment to its original state.

This statement is also supported by other findings of hazardous chemical, toxic or explosive substances, which are usually found in defunct companies that have ceased their activities.

In 2006 and 2010, the Governor of the Hradec Králové Region declared a state of emergency due to the disposal of a large amount of toxic and hazardous chemicals in the municipality of Libčany, which could have caused a serious health hazard if handled incorrectly. Among the identified risks was the possibility of a leak of hydrogen cyanide and other strong poisons, which increased the need for a quick response.

The examples given prove that the analysis of threats in the area of leaks of hazardous substances deserves attention and updating, and thus the need to revise the standard plans for this area.

This step should also be taken in view of the constantly developing area of protecting the population against the effects of CBRN substances.

- *anthropogenic sociogenic hazards:*

This area includes the threat of a large-scale migration wave and the threat of terrorism. The government of the Czech Republic declared a state of emergency in 2022 due to a large-scale migration wave. This entire area deserves a separate analysis, which is, however, closely connected to conceptual security policy not only in the Czech Republic, but also in the European Union and in the world.

Large-scale migration waves should become part of special research, since risk analysis in the true sense of the word in this area is still in its infancy. The reason is the large overlap of crisis management into conceptual security policy, which means an overlap into overall European and global political thinking in the area of attitudes towards migration. The Security Strategy of the Czech Republic 2023 does not address this issue in any way.

The situation is different in the area of terrorism. Fortunately, there was no similar extraordinary event in the Czech Republic, such as the terrorist attack on the United States of America on September 11, 2001. This attack resulted in approximately 3,000 victims and caused enormous economic and psychological impacts.

Nevertheless, the risk of terrorist attacks in the Czech Republic is high and the increase in risk is obvious. Although these are not terrorist attacks in the true sense, as there were no fundamental ideological goals or intimidation of society, they were nevertheless violent attacks with a large number of victims and can be classified as large-scale violations of the law:

- 2015 – shooting by a lone attacker with mental health problems in Uherský Brod resulted in 8 victims and the death of the perpetrator
- 2019 – shooting by a lone paranoid attacker at the University Hospital in Ostrava-Poruba resulted in 7 victims and the death of the perpetrator
- 2023 – shooting by a lone shooter inspired by foreign attacks at the Faculty of Arts of Charles University in Prague resulted in 14 deaths and the death of the perpetrator. This event was the most serious event that we classify in the category of lone shooter attacks.

These violent attacks have of course led to changes in the organization of the Police of the Czech Republic, to increased protection of soft targets, especially in schools, educational institutions, and healthcare facilities, and have generally led to increased awareness of the possibility of terrorist attacks.

Nevertheless, in the area of public order violations, some legislative measures are missing that limit the activities of security forces.

In this context, it is necessary to mention the still non-existent law on private security services. Private security services include a whole range of activities that are closely related to the security situation - from ordinary private detective services to extensive property protection or the transportation of significant funds.

The current legislative regulation under Act No. 455/1991 Coll., on trade entrepreneurship, moves private security companies and their employees to the level of ordinary entrepreneurs without special specialized legislation [16].

This means, among other things, that there are no clear licensing and qualification requirements, there is no precise definition of the rights and obligations of security personnel, there is no uniform state supervision and oversight specifically for security services. Then, one cannot speak of professional intervention in resolving violent attacks.

Unfortunately, the draft laws have been prepared for decades and have been revised or postponed several times. Discussions are still ongoing regarding the scope of powers, negotiations with professional organizations and state supervision. The latest drafts have gone through the comment procedure and approval process, but they have not yet been completed, and the Czech Republic is one of the last states in the European Union where such a special legal regulation is missing.

It cannot be overlooked that all of these violent attacks were carried out on soft targets. From this perspective, the protection of soft targets or socially significant objects is one of the main security priorities in the Czech Republic. This complex social security incident involves a very high vulnerability of soft targets and a real possibility of unacceptable loss of human life and damage to the health of people [4].

However, similar to private security services, there is no comprehensive legislative regulation of the protection of soft targets and their protection is addressed only by methodological recommendations, not laws. From this perspective, the issue of large-scale violations of the law, including terrorism, is an area that should certainly be addressed by legislation.

5. Competency Issues in the Area of Risk Analysis Processing

Within the framework of crisis management in the Czech Republic, the largest scope of obligations in the area of risk analysis is set by Act No. 240/2000 Coll., on Crisis Management (Crisis Act). This legal regulation imposes obligations primarily on crisis management authorities at the territorial level, specifically regions and municipalities with extended powers. In practice, the performance of these activities is carried out through the regional fire rescue service, the regional authority and the municipal authority of the municipality with extended powers.

From the perspective of territorial authority, it can be stated that this model respects the principle of so-called territorial knowledge, which is key both for the identification of relevant risks and for the effective implementation of proposed measures. However, the process of preparing the risk analysis itself, which forms the basis of planning

documentation, in particular crisis plans at the level of municipalities with extended powers and regions, appears problematic.

In this context, the question arises whether it is appropriate for all activities related to the preparation of crisis plans to be carried out exclusively by the regional fire rescue service. A classic example is the area of flood management, which is the most common threat in the Czech Republic. In this area, the regional authority is the basic processor, as well as in the area of epidemics, pandemics, veterinary measures or transport measures.

Historically, the regional authority, or the municipal authority of a municipality with extended powers, was the processor of crisis plans, which indicates that there are alternative models of division of competence. The optimal solution would be functional cooperation between individual institutions, which would enable the effective use of professional capacities and knowledge. However, in practice, this cooperation often fails.

The current legislative setting, which imposes the obligation to prepare a crisis plan on the region, while the performance of this activity is entrusted to the regional fire and rescue service, causes not only ambiguity in competence, but also ambiguity in responsibility for resolving a specific emergency or crisis situation [9].

A similar situation exists in the area of preparing emergency plans under Act No. 239/2000 Coll., on the Integrated Rescue System. There are also competence ambiguities in this area that do not contribute to quality preparation for and resolution of emergencies and crisis situations [15].

These ambiguities should be the subject of expert discussion and possible legislative revision in the future with the aim of ensuring systemic efficiency and a clear definition of responsibilities.

6. Recommendations for Practice

The threat analysis for the Czech Republic, which resulted in the preparation of the Threat Analysis for the Czech Republic in 2016, is correctly carried out. However, based on experience from past emergencies, it should be revised in order to respond to new threats.

Taking these findings into account, the following measures can be proposed in the area of threat analysis:

- in the area of anthropogenic technogenic hazards, review standard plans for the release of hazardous chemical substances and supplement this area with the release of these substances from mobile devices (during transport) and not limit it to stationary devices
- include in this area also experiences from research in the area of protection against the effects of CBRN substances
- in the area of anthropogenic sociogenic hazards, appeal for the accelerated adoption of the Act on Private Security Services so that the Czech Republic reaches the level of other European Union countries
- uniformly and legislatively resolve the protection of soft targets to increase the preparedness of all soft targets for the threat of an active shooter attack, a violent attack or even a terrorist attack

Among the recommendations for practice at a general level in the area of risk analysis, the following can be recommended:

- standardization of methodologies, i.e. creation of a unified framework for risk analysis at the national level
- launching of expert discussions with the aim of establishing clear competencies in the preparation of individual plans and with the aim of optimal cooperation between individual crisis management bodies
- organizing a national security workshop of top and invited experts in the given area
- to increase professional capacity, develop educational programs and training not only for crisis management workers, but especially for the public, with an emphasis on primary and secondary education.
- support for research and innovation, cooperation with the academic sphere on the development of new tools, but also increased public participation in risk mapping and planning of measures should be a matter of course.
- a separate and very important new chapter is the use of artificial intelligence, digitalization, data integration, creation of a central system for sharing risk data and the use of modern technologies for risk prediction and modelling. However, all of this must always be understood in the context that every emergency or crisis situation is resolved by a person, not by artificial intelligence.

7. Conclusions

Risk analysis is an essential element of the security system of the Czech Republic. Its effective use requires not only a high-quality legislative and institutional framework, but also modern methodological approaches, interdisciplinary cooperation and active public involvement. Future development should be directed towards greater data integration, the use of technology and strengthening society's resilience to crisis phenomena. Risk analysis is an essential tool for effective crisis management. The Czech Republic has a high-quality legislative framework, but its practical application faces a number of challenges.

The threat analysis for the Czech Republic is methodologically correct and based on it, standard plans are developed, which are then reflected in the crisis plans of individual regions of the Czech Republic. This unified system for developing crisis plans has proven itself over the long term, and all territorial self-governing units in the Czech Republic respect and adhere to this methodological procedure. This is due, among other things, to the fact that the entire

area of crisis management is a delegated state administration exercise for central administrative authorities and territorial self-governing units, and the Ministry of the Interior is responsible for the entire area.

Nevertheless, there are challenges in this area, which the authors point out.

The first area in which the development in the area of risks is reflected is *the area of legislation and legal regulations*. Here, it is necessary to emphasize in particular the adjustment of risk analysis in the area of handling hazardous chemical preparations and chemical mixtures - in other words, its extension to the area of all transports of hazardous chemical substances. This need is clearly demonstrated by practice in the Czech Republic.

Furthermore, this area involves legislative measures that would result in the accelerated adoption of the Act on Private Security Services. This need is also clearly demonstrated by practice in recent years. Although these were not terrorist attacks in the true sense of the word, there was nevertheless a violation of the rule of law on a large scale. The impact was not only on the loss of human lives, but also manifested itself in social and political life.

The second area where changes need to be made is *the area of education*. This concerns not only the area of education and increasing the professional capacities of crisis management workers, but primarily the area of education in primary and secondary schools. Although education is stated as a long-term priority, the results achieved so far do not correspond to this. Cooperation between academia and practical activities should be a matter of course in this area, and research programs should be oriented accordingly.

The third area can be called *the area of use of modern technologies*. In crisis management, it will always be true that in preparing for and especially in resolving crisis situations, the crisis management authorities will have a decisive role - this is essentially a person who is responsible according to the law. Nevertheless, when creating crisis documentation, one cannot ignore the developing artificial intelligence, the use of modern technologies for risk prediction and modelling, the use of geographic information systems, and others. A number of research projects are dealing with this problem, but the uniform implementation of the results of research projects into practice is still not successful.

A number of research projects have highlighted the complexity of risk analysis in the area of CBRN agents in terms of the presence and activity of radionuclides. Under normal conditions, the content of radioactive substances in food is very low, resulting in only a small fraction of the total dose due to natural radiation. This can be significantly different in the case of radiological accidents or terrorist attacks, which result in increased levels of radioactivity in the environment, which can significantly contribute to the radioactivity of food. The situation needs to be monitored in order to assess the benefit of internal exposure resulting from the ingestion of contaminated food [3]. In such cases, it is necessary to modify the risk analysis procedures with regard to the existing conditions. This is particularly difficult in cases of potential terrorist attacks. The area of risk analysis caused by CBRN agents, and in particular with regard to possible terrorist attacks in this area, is underestimated due to ignorance of the potential properties of these substances, but also due to prevailing views that the use of CBRN agents is very unlikely.

The threat analysis for the Czech Republic approved in 2016 by the Government of the Czech Republic is carried out using a traditional method and corresponds to the current threats to the Czech Republic. Nevertheless, there are challenges for improvement that arise from practical knowledge and the development of modern technologies. The authors believe that these challenges should be addressed in the near future by the responsible authorities with the aim of improving the protection of citizens of the Czech Republic against possible threats.

References

1. Loufková L. Risk analysis: study support for full-time and part-time studies. Prague: Police Academy of the Czech Republic in Prague, 2022. ISBN 978-80-7251-548-6.[online]. Available on z: <https://www.polac.cz/g2/view.php?knihovna/index.html>. [cit. 2025-10-25].
2. Sabol J., Bajura J., Nejedlý, Some Problems with the CBRN Risk Quantification in Terms of Stochastic and Deterministic Effects Taking into Account the Health Impact of Individual Agents, Proceedings of 4th International Conference CNDCGS'2024 ISSN 2669-2023 (print) / ISSN 2538-8959 (on-line) / DOI 10.3849/cndcgs.2024.621
3. Sabol J., Habich J., Specific consequences of using WMD: Radioactive contamination of foodstuffs and its potential health effects, Proceedings of 4th International Conference CNDCGS'2024 ISSN 2669-2023 (print) / ISSN 2538-8959 (on-line) / DOI 10.3849/cndcgs.2024.603
4. Collective of authors Protection of soft targets, Perspectives of public-private sector cooperation, Police Academy of the Czech Republic in Prague, 2021, ISBN 978-80-7251-518-9
5. Security Strategy of the Czech Republic 2023, Government of the Czech Republic, Prague 2023, ISBN 978-80-7441-099-4
6. Protection of the population in the Czech Republic: Threat Analysis for the Czech Republic. Fire Rescue Service of the Czech Republic [online]. Available on z: <https://www.hzscr.cz/clanek/ochrana-obyvateľstva-v-ceske-republice.aspx> [cit. 2025-10-24].
7. Constitutional Act No. 1/1993 Coll., Constitution of the Czech Republic.
8. Constitutional Act No. 110/1998 Coll., on the Security of the Czech Republic.
9. Act No. 240/2000 Coll., on Crisis Management, as amended.
10. Act No. 128/2000 Coll., on Municipalities, as amended.

11. Act No. 129/2000 Coll., on Regions, as amended.
12. Act No. 36/1960 Coll., on the territorial division of the state, as amended
13. Act No. 129/2000 Coll., on regions (regional system), as amended
14. Act No. 131/2000 Coll., on the capital city of Prague, as amended
15. Act No. 239/2000 Coll., on the integrated rescue system and on amendments to certain acts, as amended
16. Act No. 455/1991 Coll., on trade business, as amended
17. Concept of population protection until 2025 with a view to 2030, Resolution of the Government of the Czech Republic No. 560/2021
18. Concept of population protection until 2020 with a view to 2030, Resolution of the Government of the Czech Republic No. 805/2013

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